

REMARKS

Claims 1-9 and 15-24 were pending of which Claims 1-4, 6-9, 15-22, and 24 were rejected and Claims 5 and 23 were objected to.

Drawings

The Examiner object to the drawings stating that Fig. 1 includes r and θ_m which are not mentioned in the description. Fig. 1 has been amended to change the " r " in Fig. 1 to " R " as is disclosed in the text. Moreover, Applicants point out that θ_m is mentioned in the text at page 4, line 18. Figs. 3 and 4 have been amended to change "Rotory Stage" to "Rotary Stage". Replacement sheets for all the figures and annotated sheets showing the changes are attached hereto.

Claim Rejections – 35 U.S.C. §103

Claims 1, 6, 9, 15, 16, 17, and 19 were rejected under 35 U.S.C. §103(a) as being unpatentable over Maeda et al., (6,263,099) ("Maeda") in view of Sullivan et al. (6,414,752) ("Sullivan") and further in view of Uritsky et al. (5,381,004) ("Uritsky") and Poultney et al. (5,474,647) ("Poultney"). Applicants request reconsideration.

Independent Claim 1 recites "positioning a wafer at a fixed station" and "moving the optical system relative to the wafer to inspect a plurality of separate inspection areas on the wafer." Maeda, on the other hand, teaches positioning a wafer on a movable XYZ θ stage 2. Col. 6, lines 56-57, Fig. 1. The Examiner stated that "Maeda suggests that the wafer may be stationary while the optical system is moved (19 of Fig. 1)." Applicants disagree. Element 19 of Maeda is a mechanism for to select different annular-looped illuminations by rotationally moving a disc type mask 5. See, Col. 10, lines 62-66, Fig. 2. Element 19 does not move the optical system relative to the wafer. Moreover, Applicants submit that the rotational motion that moving mechanism 19 applies to the disc type mask 5 does not suggest that Maeda's XYZ θ stage 2 may be held stationary while the optical system moves relative to a wafer held on the stage.

The Examiner cited Sullivan as teaching "the equivalence between a fixed wafer and moving optical system versus a moving wafer and fixed optical system (col. 4, lines 10-20)." Applicants submit, however, that the relative motion between the optical system and the wafer in Sullivan is simple. For example, in Figs. 1B and 3 and the accompanying text, Sullivan

discusses moving the wafer through either rotation or vertical translation. See, e.g., Col. 9, lines 13-17, col. 9, lines 65-col. 10, line 1. Thus, Sullivan uses an uncomplicated motion. In fact, the motion in Sullivan is simple enough that the relative motion between the optics and the wafer may be performed manually. See, e.g., Col. 9, lines 13-17 and lines 57-59. Maeda, on the other hand, use a stage with four degrees of freedom XYZθ. Accordingly, Applicants submit that it would not be obvious to modify Maeda's complex stage system in which the wafer moves while the optical system is held stationary with a system suggested in Sullivan in which the wafer is held stationary while the optical system moves.

Finally, the filing date of Sullivan is June 18, 1999. The attached Declaration Pursuant to 37 C.F.R. §1.131 and the attached exhibits show that the date of conception of invention claimed in the present application was prior to the filing date of Sullivan and that there was diligence between the effective priority date of Johnson and the constructive reduction to practice of the present application. Accordingly, Sullivan should not be used as a prior art reference.

Additionally, Independent Claim 1 recites "moving the optical system as required to locate an edge of the wafer; and moving the optical system to follow the edge of the wafer and locate an alignment feature on the edge of the wafer" and "moving the optical system relative to the wafer to inspect a plurality of separate inspection areas on the wafer." Maeda does not teach or suggest locating an edge of the wafer, following the edge of the wafer or locating an alignment feature on the edge of the wafer using the same optical system that is used to inspect the inspection areas on the wafer.

The Examiner stated that Maeda "suggests that preliminary alignment has been performed between the wafer and optical system for the imaging sensors are capable of imaging patterns on the object being inspected (Figs. 1, 30, 31)." Applicants respectfully disagree. Figs. 1, 30, and 31 do not include a prealignment system. Moreover, Applicants' attorney can find no reference in Maeda regarding a prealignment system nor a discussion of the need for prealignment. Thus, Applicants submit that it is not clear that there is a need for Maeda to prealign the system. Moreover, if Maeda were to prealign, there is no suggestion to use anything other than a conventional prealignment system. For example, there is no suggestion in Maeda that the "optical system" that is used "to inspect a plurality of separate inspection areas on the wafer" is also used "to locate the edge of the wafer" and "locate an alignment feature on the edge of the wafer", as recited in Claim 1.

The Examiner cited Uritsky as teaching prealignment. Applicants point out that Uritsky teaches that the coordinates of the notch of the wafer are obtained (12) using a laser and then the wafer is transported to a scanning electron microscope to inspect the wafer (18, Fig. 1a and 50, Fig. 1c). Thus, Uritsky does not disclose using the same optical system to locate the alignment feature and to inspect the wafer. Poultney was also cited as disclosing a prealignment system. Poultney, however, uses a “wafer prealigner 24” and a separate “wafer metrology instrument 28”. Fig. 1, col. 4, lines 20-25. Thus, Poultney fails to disclose using the same optical system to locate the alignment feature and to inspect the wafer.

Thus, Applicants respectfully submit that Claim 1 is patentable over the combination of Maeda, Sullivan, Uritsky and Poultney. Reconsideration and withdrawal of this rejection is respectfully requested. Claims 6-9 depend from Claim 1 and are, therefore, likewise patentable for at least the same reasons.

Claim 15 includes elements that are similar to the elements of Claim 1 discussed above. For example, Claim 15 recites “holding the wafer in a stationary position”. Claim 15 also recites “moving an optical system rotationally relative to the wafer ... to inspect a plurality of separate inspection areas on the wafer without moving the wafer” and “locating the alignment feature comprises moving the optical system to locate an edge of the wafer, and moving the optical system rotationally to follow the edge of the wafer”.

Thus, Claim 15 is patentable over the combination of Maeda, Sullivan, Uritsky and Poultney for reasons similar to that discussed above in reference to Claim 1. Reconsideration and withdrawal of this rejection is respectfully requested. Claims 16, 17, and 19 depend from Claim 1 and are, therefore, likewise patentable for at least the same reasons.

Claim 2 was rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Maeda, Sullivan, Uritsky and Poultney further in view of Meeks et al. (2004/0046959) (“Meeks”) and Elliot et al. (5,669,979) (“Elliot”). Applicants request reconsideration

Claim 2 depends from Claim 1. Neither Meeks nor Elliot make up for all the deficiencies of Maeda, Sullivan, Uritsky and Poultney. Accordingly, Claim 2 is patentable over the combination of Maeda, Sullivan, Uritsky and Poultney further in view of Meeks and Elliot for at least the same reasons as Claim 1.

Claim 3-4 and 18 were rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Maeda, Sullivan, Uritsky and Poultney further in view of Sandland et al., (4,556,317) ("Sandland"). Applicants request reconsideration

Claims -3-4 depend from Claim 1 and Claim 18 depends from Claim 15. Sandland does not make up for all the deficiencies of Maeda, Sullivan, Uritsky and Poultney. Accordingly, Claims 3-4 and 18 are patentable over the combination of Maeda, Sullivan, Uritsky and Poultney further in view of Sandland for at least the same reasons as Claims 1 and 15.

Claim 7 and 20 were rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Maeda, Sullivan, Uritsky and Poultney further in view of Cheng (5,546,179) ("Cheng"). Applicants request reconsideration

Claim 7 depends from Claim 1 and Claim 20 depends from Claim 15. Cheng does not make up for all the deficiencies of Maeda, Sullivan, Uritsky and Poultney. Accordingly, Claims 7 and 20 are patentable over the combination of Maeda, Sullivan, Uritsky and Poultney further in view of Cheng for at least the same reasons as Claims 1 and 15.

Claim 8 was rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Maeda, Sullivan, Uritsky and Poultney further in view of Tsujimoto et al., (6,238,515) ("Tsujimoto"). Applicants request reconsideration

Claim 8 depends from Claim 1. Tsujimoto does not make up for all the deficiencies of Maeda, Sullivan, Uritsky and Poultney. Accordingly, Claim 8 is patentable over the combination of Maeda, Sullivan, Uritsky and Poultney further in view of Tsujimoto for at least the same reasons as Claim 1.

Claim 21 and 22 were rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Maeda in view of Sandland. Applicants request reconsideration.

Independent Claim 21 recites "providing lateral movement of the optical system with respect to the wafer". As discussed above in reference to Claim 1, Maeda does not teach moving the optical system relative to the wafer.

Independent Claim 21 also recites "rotating the image of an inspection area based on the relative angular orientation of the optical system with the wafer". The Examiner cited Sandland as disclosing rotating images to correct for inspection changes (col. 16, lines 10-40). Sandland discloses that "the turntable 94 is rotated as the X-Y stage 28 is 'flipped' from the macro to the micro inspection station. This is done to correct for the rotation of the wafer due to the 'flipping' movement...." Thus, Sandland rotates the wafer, which is on the turntable 94 (See, col. 5, lines 34-38), to correct for the movement of the X-Y stage 28. Sandland, however, does not disclose "rotating the image ... based on the relative angular orientation".

Thus, Applicants respectfully submit that Claim 21 is patentable over the combination of Maeda and Sandland. Reconsideration and withdrawal of this rejection is respectfully requested. Claim 22 depends from Claim 21 and is, therefore, likewise patentable for at least the same reasons.

Claim 24 was rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Maeda, Sandland and Sullivan. Applicants request reconsideration

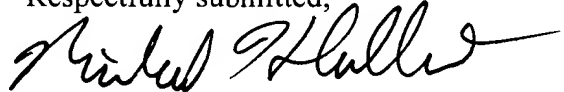
Claim 24 depends from Claim 21. Sullivan does not make up for all the deficiencies of Maeda and Sandland. Accordingly, Claim 24 is patentable over the combination of Maeda, Sandland, and Sullivan for at least the same reasons as Claim 12.

Applicants respectfully requests the Examiner to initial and return the Form PTO-1449, which was filed on June 30, 2004.

Claims 1-9 and 15-24 remain pending. For the above reasons, Applicants respectfully request allowance of Claims 1-9 and 15-24. Should the Examiner have any questions concerning this response, the Examiner is invited to call the undersigned at (408) 982-8202.

**Via Express Mail Label No.
EV 450 194 526 US**

Respectfully submitted,



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Amendment to the Drawings:

The attached sheets of drawings include changes to Figs. 1, 3 and 4. Replacement sheets for all figures and annotated sheets showing the changes made are attached hereto.

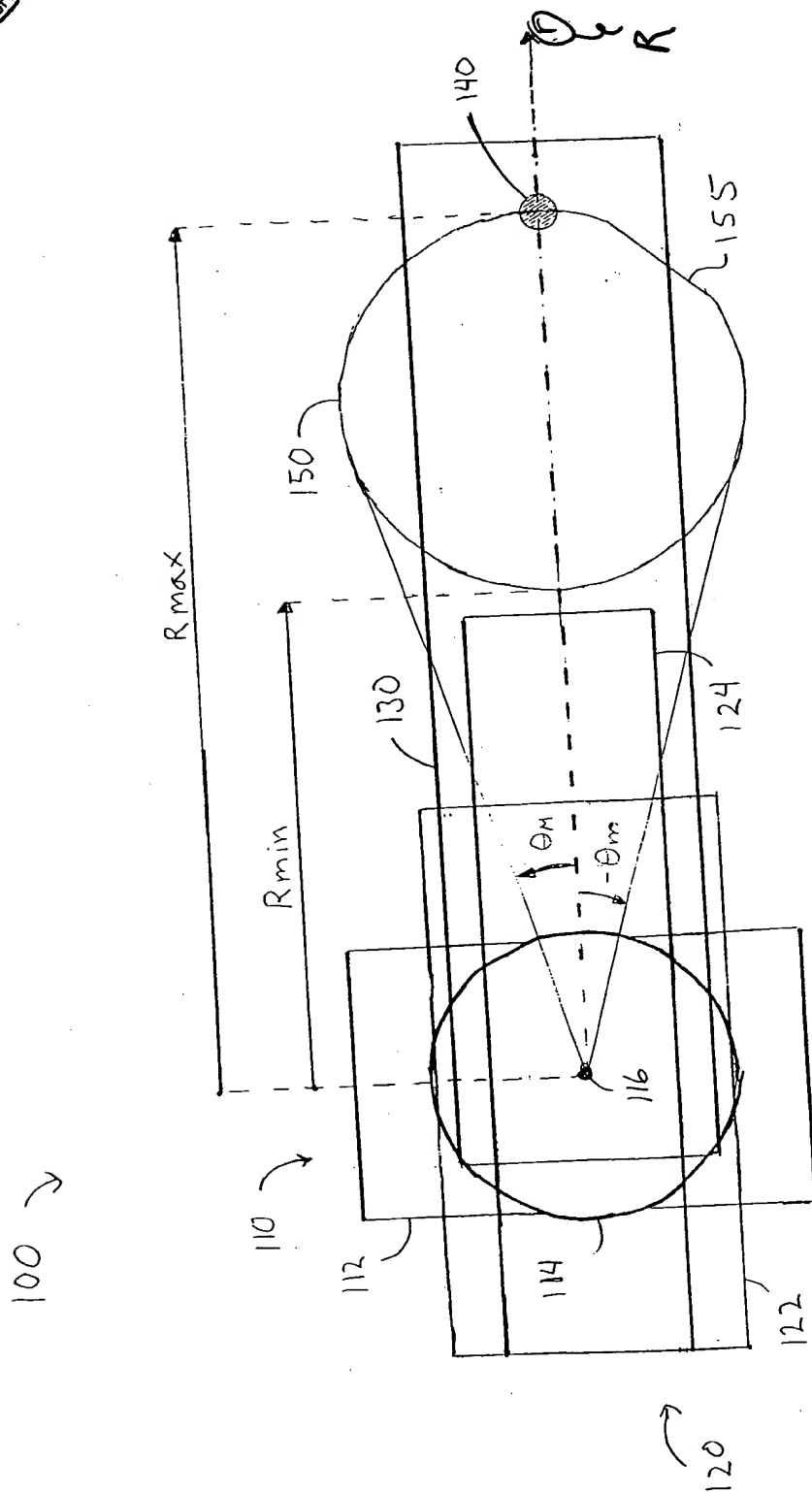


FIG 1

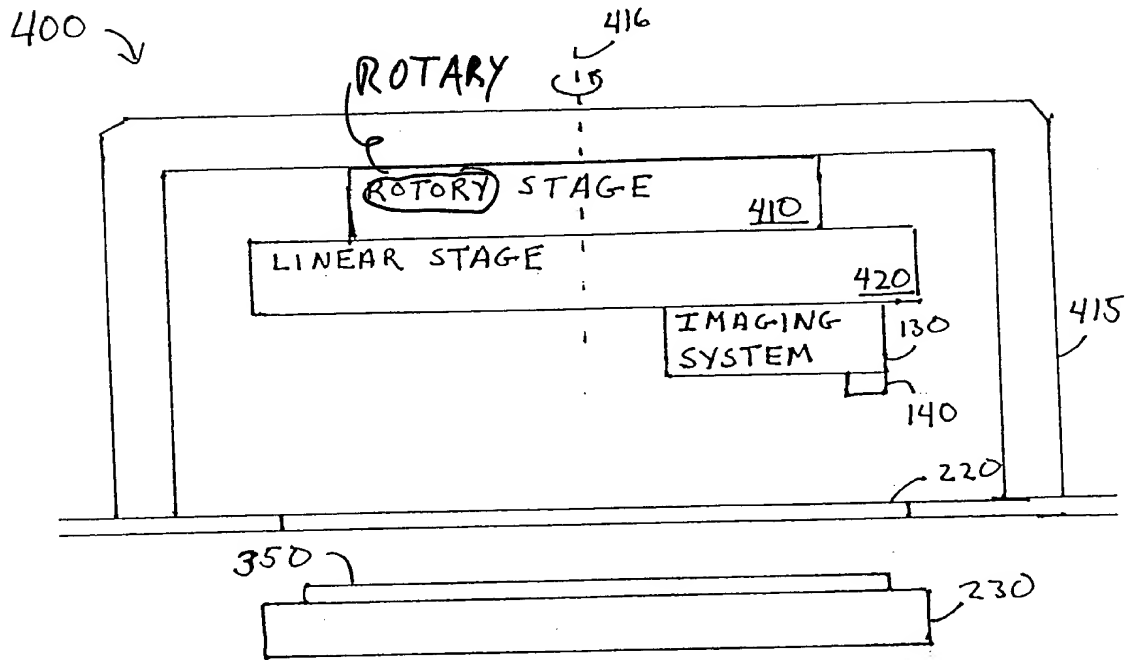


FIG. 4